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ABSTRACT

To better understand the effects of the family on the reading achievement of black children, a study examined the relative influence of specific maternal variables and the family socioeconomic status (SES) on reading achievement. A total of 31 mother-child dyads were selected from a university reading clinic, with the children aged 7 through 11 years. The children were given two reading tests and an intelligence test, and their mothers were individually interviewed to gather information on family characteristics and background and the mothers' estimates and expectancies of their children's reading ability. The mothers also completed an attitude scale. A multiple regression model was employed to determine the joint and unique contributions of the family variables to reading achievement. The input variables included the mother's nonacceptance of the child, her predictions and her expectations of the child's grade level in reading, and the family SES. To control for the effects of ability, the Peabody Picture Vocabulary test was administered to the students. The resulting data indicated that the maternal subset of variables significantly and nontrivially accounted for a substantial amount of the variation in reading achievement. Further, the amount of variation accounted for by the maternal composite was far greater than that accounted for by SES. (HTH)

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THE RELATIONSHIP OF MATERNAL INPUTS AND SES TO READING ACHIEVEMENT IN BLACK FAMILIES

by

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Purpose of the Study

The primary intent of this study was to examine the relative influence of specific maternal variables and the background family factor of socioeconomic status (SES) on reading achievement. To better understand the effects of the family on reading achievement, there is a need for family measures that are more sensitive and more easily collected and reliably measured than those variables traditionally reported. Therefore, an attempt was made to identify a set of maternal variables, not heretofore frequently investigated, that would account for a nontrivial amount of variation in reading achievement.

A secondary purpose of this study was to investigate the reading achievement of children from black families. According to McAdoo (1981), there are many resources for black family research that can still be tapped which will add to our scholarship in this area. She states that valid research studies are needed to overcome the myths that persist about the black family and to provide a more realistic picture of the diversity of Black America.

Historical Background

Measures of educational outcomes have been found to vary not only by the educational process applied to pupils but also by the characteristics of pupils' families. Two major studies, the Equality of Educational Opportunity survey (Coleman, 1966) and the Plowden Report (1967), have given support to the argument that family characteristics have a greater influence on academic achievement than school characteristics. The primary measure of family environment used in research to account for variation in pupil achievement has been SES. In the 1960's the Chicago school of family environment research (Wolf, 1966) held the position, however, that process family variables were of more importance than SES variables; various home factors were measured and related to children's academic achievement. Walberg and Marjoribanks (1976) later gave support to this position, concluding from their research that detailed interview assessments of factors in the home may provide for better predictions in children's ability than SES.

Recently there has been conceptual interest in the phenomenon of interacting inputs such as that expressed by Bridge, Judd, and Moock (1979). They contend that some inputs are not important by themselves, but when combined with other inputs they may become important. Applying this framework to family environment research, it can be conjectured that certain

family factors, when grouped together, account for some of the explained variation in reading achievement.

Data Source

A total of 62 subjects, or 31 mother-child dyads, were obtained from a university reading clinic. Black boys and girls from 7 to 11 years of age were selected if they had enrolled for a reading class at the clinic for the first time. There were 19 boys and 12 girls. They were administered two reading tests and an intelligence test. Their mothers were individually interviewed, using an instrument designed for this research to gather information on family characteristics, the background of the child, and the mother's estimates and expectancies of her child's reading ability. This instrument, called the Interview Schedule, has been copyrighted. The mothers were also given an attitude scale, The Mother-Child Relationship Evaluation (Roth, 1961), to complete by themselves.

Research Design

A multiple regression model was employed to determine the joint and unique contributions of the family variables to reading achievement. The input variables included mother's nonacceptance of the child (measured by the Roth scale), mother's predictions of child's grade level of reading,

mother's expectancies for the child's grade level of reading, and SES. The variable socioeconomic status was principally measured by the criterion of occupational prestige. For a rating scheme, the National Opinion Research Center Occupation Scale and the New York City Planning Commission on Labor Force Participation were used to classify the occupation of the head of the household.

To control for the effects of ability, an IQ test, the Peabody Picture Vocabulary Test, was administered to the students. A partial correlation analysis (Table 1) was made to remove the effects of this control variable. The output variable, reading achievement, represented an averaged grade level score from three subskills - word recognition, vocabulary, and comprehension - measured by the reading subtest of the WRAT and the Gates-MacGinitie Reading Tests.

Two hypotheses concerned with the multivariate nature of the relationship between family factors and reading achievement were empirically tested. They were as follows:

Hypothesis I: There is a significant multiple correlation between a maternal cluster of variables and socioeconomic level with reading test scores, controlling for the effects of verbal intelligence.

Hypothesis II: There is a greater correlation between the maternal cluster with reading test scores than between

socioeconomic level with reading test scores, controlling for the effects of verbal intelligence.

To test these hypotheses, various statistical treatments were administered. An incremental method of data analysis was chosen to examine the measured variables. Single variables were analyzed, then pairs of variables, and finally sets of variables. Data reduction by formation of variable composites was the result. A multiple regression model was ultimately employed with a .01 level of significance established. Partial correlation coefficients were necessary to obtain prior to regressing the output variable composite on the set of family variables to control for the presumed effects of verbal IQ. More than one multiple regression approach was used to examine the collective and separate contribution of the family variables: an overall goodness of fit test and decomposition of explained variance by blockwise and stepwise methods of entry.

Results and Conclusions

The statistical procedures employed in this study for data analysis were computed on electronic computers using various subprograms of the Statistical Package for the Social Sciences. The reliability of the maternal attitude scale was assessed, resulting in a coefficient alpha of .77. A scatter

diagram was plotted to determine the linearity of the relationship between the input and output variables; the requirements of this assumption were sufficiently met.

A blockwise analysis regressing average reading score on the maternal composite resulted in a multiple R of .80, significant at the .01 level, and an adjusted R square of .60. When SES was entered into the equation before the maternal subset of variables, this hierarchical solution resulted in an adjusted R square of -0.03 at the first step; this result was predictable from the partial correlation between SES and average reading score which was .05. When the input variables were entered in a forward stepwise inclusion manner, SES was entered on Step 3 with maternal estimate and maternal expectancy being entered on the previous steps and accounting for most of the explained variation.

Both operational hypotheses were confirmed. Firstly, the maternal subset of variables significantly and nontrivially accounted for a substantial amount of the explained variation in reading achievement. Secondly, the amount of explained variation accounted for by the maternal composite was far greater than that accounted for by SES. Hence, in this particular study SES was a weak predictor when compared with the maternal subset of variables which explained about 60

percent of the total variation, even when SES was entered first in the linear equation.

Subsidiary findings from the multistage analysis were as follows:

1. Seventy-five percent of the students scored at 99 or below on the PPVT.

2. Near equal distribution on the socioeconomic index for lower- and middle-class categories was found.

3. High intercorrelations between word recognition, vocabulary, and comprehension were found for mother's estimates, mother's expectancies, and reading test scores. As a result, composite scores were computed for each of the variable sets, using the mean value to represent the reading subskills. See Table 2.

4. A Pearson product-moment correlation of -0.27 was found between maternal nonacceptance and PPVT scores; lower-class mothers were high in nonacceptance while middle-class mothers were low.

5. Estimates of word recognition ability were very accurate. Expectancies for comprehension were almost three years above actual reading scores.

6. In the test for multicollinearity of the maternal variables, a Pearson r of 0.80 was found for the relationship between mother's estimates and mother's expectancies.

To conclude, certain mother's beliefs and expectancies are strongly related to children's reading achievement and, as evidence from this study shows, they contribute more to explained variance than the background family factor of socio-economic status. Few educational studies in the past utilizing family variables have concentrated solely on reading measures as indicators of academic achievement. Few studies have intensively examined these variables within the black subpopulation. The present study attempted to fill this void by identifying significant maternal variables that would possibly be related to reading achievement for black mothers and children.

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Table 1. Partial correlation coefficients of all variables with verbal intelligence used as a control variable

	SCR710	NONAC100	EST110	EXP120	SES200
SCR710	1.00	-0.10	0.80	0.63	0.05
NONAC100	-0.10	1.00	-0.06	-0.07	-0.53
EST110	0.80	-0.06	1.00	0.80	0.14
EXP120	0.63	-0.07	0.80	1.00	0.13
SES200	0.05	-0.53	0.14	0.13	1.00

Coding Scheme

SCR710 - child's average reading score
NONAC100 - maternal nonacceptance
EST110 - composite of mother's estimates of reading grade levels
EXP120 - composite of mother's expectancies of reading grade levels
SES200 - index of socioeconomic status of the family

Table 2. Means and standard deviations of word recognition, vocabulary, and comprehension for mother's estimates, mother's expectancies, and reading test scores

Variable	Mean	SD
Mother's estimates		
WR111	3.44	1.46
VOCAB112	3.98	1.41
COMP113	3.71	1.61
Mother's expectancies		
WR121	5.47	1.66
VOCAB122	5.50	1.73
COMP123	5.31	1.76
Reading test scores		
WR711	3.65	1.41
VOCAB712	2.81	1.58
COMP713	2.54	1.23